

WHAT IS CLAIMED IS:

1. An automatically-activated bar code symbol reading system comprising:

5 (1) a hand-supportable housing supportable in or on the hand of a user, and having a light transmission aperture through which visible light can exit and enter said hand-supportable housing;

10 (2) automatic scan data producing means in said hand-supportable housing for producing scan data from a bar code symbol on an object located within at least a portion of a laser scanning field definable relative to said hand-supportable housing, said scan data producing means including

(i) a laser beam producing means disposed in said hand-supportable housing for producing and projecting a laser beam through said light transmission aperture,

(ii) scanning means for repeatedly scanning said laser beam across said laser scanning field and across said bar code symbol on said object, and

15 (iii) laser light detecting means for detecting the intensity of laser light reflected off said bar code symbol and passed through said light transmission aperture and for automatically producing scan data indicative of said detected light intensity;

20 (3) bar code symbol detection means in said hand-supportable housing for processing produced scan data so as to detect the presence of said bar code symbol on said object and to automatically generate a first control activation signal ( $A_2$ ) in response to the detection of said bar code symbol in said laser scanning field;

25 (4) decode processing means in said hand-supportable housing for processing produced scan data so as to decode said bar code symbol on said object and for automatically producing symbol character data representative of said decoded bar code symbol, and automatically generating a second control activation signal ( $A_3$ ) indicative of the production of said symbol character data;

(5) manually-actuable data transmission switch integrated with said hand-supportable housing, for producing a third control activation signal ( $A_4$ ) in response to the manual-actuation of said manually-actuable data transmission switch;

30 (6) data transmission means in said hand-supportable housing, for transmitting said symbol character data to a host device operably connected to said automatic bar code symbol

reading system only in response to the occurrence of at least said second and third control activation signals; and

(7) system control circuitry for automatically controlling the operation of said automatic bar code symbol reading system in response to the generation of said first, second and third control activation signals.

2. The automatically-activated bar code symbol reading system of claim 1, which further comprises:

a hand-held mode of automatic operation and a countertop-supported mode of automatic operation; and

mode selection means integrated with said hand-supportable housing, for generating said third control activation signal in response to said hand-supportable housing being placed in a scanner stand or on a countertop surface.

3. The automatically-activated bar code symbol reading system of claim 1, wherein said bar code symbol has first and second envelope borders, and said bar code symbol detection means detects said bar code symbol by detecting said first and second envelope borders.

4. The automatically-activated bar code symbol reading system of claim 1, wherein said scan data producing means is activatable, and said hand-supportable bar code symbol reading device further comprises

an object detector in said hand-supportable housing, for detecting said object in at least a portion of an object detection field defined relative to said housing and automatically generating a fourth activation control signal ( $A_4$ ) indicative of the detection of said object in at least a portion of said object detection field; and

wherein said system control circuitry automatically controls the operation of said automatic bar code symbol reading system in response to the generation of said first, second, third and fourth control activation signals.

5. The automatically-activated bar code symbol reading system of claim 4, wherein said object detector comprises

a signal transmitting means for transmitting a signal towards said object in said object detection field, and

a signal receiving means for receiving said transmitted signal reflected off said object in at least a portion of said object detection field, and automatically generating said activation signal indicative of the detection of said object in at least a portion of said scan field.

6. The automatically-activated bar code symbol reading system of claim 5, wherein said signal transmitting means comprises an infra-red light source for transmitting a pulsed infra-red light signal, and wherein said signal receiving means comprises an infra-red light detector disposed in said hand-supportable housing.

7. The automatically-activated bar code symbol reading system of claim 5, wherein said signal transmitting means comprises a laser diode for transmitting a pulsed laser signal, and wherein said signal receiving means comprises a photodetector disposed in said hand-supportable housing.

8. The automatically-activated bar code symbol reading system of claim 1, wherein said laser beam producing means comprises a laser diode for producing a visible laser beam.

9. The automatically-activated bar code symbol reading system of claim 1, wherein said hand-supportable housing comprises a head portion and handle portion.

10. The automatically-activated bar code symbol reading system of claim 9, wherein said bar code symbol detection means and said scan data producing means are disposed in said head portion.

11. An automatically-activated laser scanning bar code symbol reading system, comprising:  
a hand-supportable housing;  
a laser-scanning bar code symbol reading mechanism, disposed in said hand-supportable housing, for repeatedly reading one or more bar code symbols on an object within a predetermined time period, and in response to each new successful reading of one of said bar

code symbols within said predetermined time period, producing a new symbol character data string representative of said read bar code symbol;

a data transmission circuit, disposed in said hand-supportable housing, for transmitting, when activated, a selected one of said produced symbol character data strings to a host system operably connected to said automatically-activated laser scanning bar code symbol reading system;

a manually-activatable data transmission switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the actuation of said manually-activatable data transmission switch within said predetermined time period; and

a system controller for activating said data transmission circuit in response to the generation of said data transmission control activation signal so that a symbol character data string, produced currently with or immediately subsequent to the activation of said manually-activatable data transmission switch, is transmitted to said host system.

12. The automatically-activated laser scanning bar code symbol reading system of claim 11, which further comprises an indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said laser-scanning bar code symbol reading mechanism and a symbol character data string representative thereof is produced thereby.

13. The automatically-activated laser scanning bar code symbol reading system of claim 11, which further comprises

a hand-held mode of automatic operation and a countertop-supported mode of automatic operation; and

mode selection means integrated with said hand-supportable housing, for generating said data transmission control activation signal in response to said hand-supportable housing being placed in a scanner stand or on countertop surface.

14. An automatically-activated bar code symbol reading system for carrying out bar code symbol reading operations, comprising:

a hand-supportable housing;

a manually-activatable data transmission activation switch integrated with said hand-supportable housing; and

an automatically-activated laser scanning bar code symbol reading engine, disposed within said hand-supportable housing, and having

(i) a preprogrammed set of operational states wherethrough the system automatically passes during each bar code symbol reading operation, and

(ii) a preprogrammed symbol character data transmission state of operation into which said system is automatically induced in response to the manually-actuation of said symbol character data transmission activation switch.

15. The automatically-activated bar code symbol reading system of claim 14, wherein the preprogrammed set of operational states include a bar code presence detection state of operation and a bar code symbol reading state of operation.

16. The automatically-activated bar code symbol reading system of claim 15, wherein the preprogrammed set of operational states further include an object detection state of operation.

17. The automatically-activated bar code symbol reading system of Claim 11, which further comprises an objection detection subsystem realized using either infrared (IR) signal transmission/receiving technology, or low-power non-visible laser beam signaling technology, for automatically detecting an object within an object detection field defined relative to said hand-supportable housing.

18. The automatically-activated bar code symbol reading system of claim 11, which further comprises a set of color-encoded light sources provided on the exterior of said hand-supportable housing for sequentially generating a set of visually-perceptible state indication signals that visually indicate to the user the various states of operation, wherethrough said system automatically passes during each instance of automatic bar code symbol reading in accordance with the present invention.

19. An automatically-activated bar code symbol reading system of claim 15, wherein the set of color-encoded state indicating light sources on the exterior of said hand-supportable housing sequentially generate a visually-perceptible object detection indication signal when the system is automatically induced into its the object detection state of operation, a visually-perceptible bar code symbol presence detection indication signal when the system is automatically induced into its bar code symbol presence detection state of operation, and a visually-perceptible bar code symbol reading indication signal when the system is automatically induced into its bar code symbol reading state of operation, during each automatic bar code symbol reading cycle carried out by said system.

20. An automatically-activated bar code symbol reading system comprising:

a hand-supportable housing;

a bar code symbol reader, disposed in said hand-supportable housing, for automatically reading one or more bar code symbols on an object and automatically generating a symbol character data string in response to each bar code symbol read thereby;

a manually-activatable data transmission switch integrated with said hand-supportable housing, for producing a data transmission activation signal; and

a data transmission device for transmitting to a host system, a selected one of said symbol character data strings, in response to the generation of said data transmission activation signal.

21. An automatically-activated bar code symbol reading system having an automatic hands-on mode of operation, an automatic hands-free mode of operation, a bar code symbol reading state and a data transmission state, said automatically-activated bar code symbol reading system comprising:

a hand-supportable housing;

a laser scanning bar code symbol reading device, disposed in said hand-supportable housing, for automatically reading one or more bar code symbols on an object, and producing a symbol character data element each instance one said bar code symbol is read from said object during said bar code symbol reading state of operation;

a data transmission circuit for selectively transmitting a produced symbol character data string to a host system during said data transmission state of operation;

a manually-actuable data transmission switch, integrated with said hand-supportable housing, for activating said data transmission state during said hands-on mode of operation, so as to enable the transmission of a selected one of said produced symbol character data strings to said host system; and

5 a mode selection sensor, integrated with said hand-supportable housing, for activating said data transmission state during said hands-free mode of operation, so as to enable the transmission of a selected one of said produced symbol character data strings to said host system.

10 22. The automatically-activated bar code symbol reading system of claim 21, which further comprises a base unit is provided for supporting said hand-supportable bar code symbol reading device during said automatic hands-free mode of operation.

15 23. The automatically-activated bar code symbol reading system of claim 21, wherein said data transmission circuit is disposed within said hand-supportable housing.

20 24. The automatically-activated bar code symbol reading system of claim 21, wherein a wireless data packet transmission and reception scheme is used to carry out data transmission during said data transmission state.

25 25. The automatically-activated bar code symbol reading system of claim 21, wherein said laser scanning bar code symbol reading device comprises a bar code symbol detection field and the bar code symbol reading field which are produced by either a one-dimensional, two-dimensional or omni-directional laser scanning engine embodied within said hand-supportable housing.

30 26. The automatically-activated bar code symbol reading system of claim 21, wherein the hand-supportable bar code symbol reading device can be used as either a portable hand-supported laser scanner in said automatic hands-on mode of operation, or as a stationary laser projection scanner in said automatic hands-free mode of operation.

27. The automatically-activated bar code symbol reading system of claim 21, wherein said data packet transmission circuit is activated in response to the user's manual-activation of said data transmission activation switch.

28. The automatically-activated bar code symbol reading system of claim 21, wherein said hands-free mode of operation is automatically selected by placing said hand-supportable housing within a support stand or on a counter surface, and said hands-on mode of operation is selected by removing said hand-supportable housing from said support stand or off said counter surface.

29. A method of transmitting automatically-generated bar code symbol character data within a hand-supportable bar code symbol reading device, to a host computer system, said method comprising the steps:

automatically generating symbol character data strings representative of a bar code symbol being repeatedly read by a hand-supportable bar code reading device having a manually-activatable data transmission switch to enable transmission of a selected one of said symbol character data strings, to a host system operably connected to said hand-supportable bar code reading device; and

manually-actuating said data transmission switch to enable the transmission of a selected one of said symbol character data strings, to said host system.

30. The automatically-activated bar code symbol reading system comprising:

a hand-supportable bar code reading device for repeatedly reading one or more bar code symbols on an object and automatically generating symbol character data strings representative of each bar code symbol being repeatedly read thereby; and

a manually-activatable data transmission switch, integrated with said hand-supportable bar code reading device, for enabling transmission of a selected one of said symbol character data strings, to a host system operably connected to said hand-supportable bar code reading device.



31. A method of reading bar code symbols on an object using a hand-supportable device, comprising the steps of:

(a) repeatedly reading one or more bar code symbols on an object within a predetermined time period, and in response to each new successful reading of one of said bar code symbols within said predetermined time period, producing a new symbol character data string representative of said read bar code symbol; and

(b) a manually-actuating a data transmission switch integrated with said hand-supportable device, for generating a data transmission activation control signal within said predetermined time period, thereby selecting one of said produced symbol character data strings for transmission to a host system operably connected to said hand-supportable unit.

32. The method of claim 31, which further comprises producing a visual indication upon each new successful reading of one of said bar code symbols.

33. The method of claim 31, which further comprises the steps:

generating said data transmission control activation signal in response to said hand-supportable device being placed in a scanner stand or on countertop surface.

34. An automatically-activated code symbol reading system for repeatedly generating symbol character data strings, representative of a repetitively read bar code symbol, and transmitting a selected of said symbol character data strings to a host system operably connected to said automatically-activated code symbol reading system, said automatically-activated code symbol reading system comprising:

a hand-supportable housing;

a bar code symbol reading mechanism, disposed within said hand-supportable housing, for automatically generating a visible laser scanning pattern for repeatedly reading one or more bar code symbols on an object during a bar code symbol reading cycle, and automatically generating a new symbol character data string in response to each bar code symbol read thereby;

a manually-activatable data transmission switch, integrated with said hand-supportable housing, for producing a data transmission control activation signal within said hand-supportable housing;

wherein during system operation,

5 (i) the user visually aligns the visible laser scanning pattern with a particular bar code symbol on an object (e.g. product, bar code menu, etc.) so that at least one said bar code symbol is scanned, detected and decoded in a cyclical manner, and each time the scanned bar code symbol is successfully read during said bar code symbol reading cycle, a new bar code symbol character string is produced, and

10 (ii) the user actuates said data transmission switch during said bar code symbol reading cycle, causing data transmission control activation signal to be produced, and thereby enabling a currently or subsequently produced symbol character data string to be automatically selected and transmitted to said host system.

15 35. The automatically-activated code symbol reading system of claim 34, which further comprises an indicator light on the hand-supportable housing, and wherein each time said new bar code symbol character string is produced, said indicator light on the hand-supportable housing is actively driven.

20 36. A method for repeatedly generating symbol character data strings, representative of a repetitively read bar code symbol on an object, and transmitting a selected symbol character data string to a host system for storage and/or processing, said method comprising the steps of:

25 (a) supporting a hand-supportable bar code symbol reading device adjacent an object bearing one or more bar code symbols to be read, said hand-supportable bar code symbol reading device having a manually-activatable data transmission switch for producing a data transmission control activation signal within said hand-supportable bar code symbol reading device;

30 (b) automatically generating a visible laser scanning pattern from said hand-supportable bar code symbol reading device, for repeatedly reading said one or more bar code symbols on said object during a bar code symbol reading cycle, and automatically generating a new symbol character data string in response to each bar code symbol read thereby;

(c) visually aligning said visible laser scanning pattern with one said bar code symbol on said object so that one said bar code symbol is scanned, detected and decoded in a cyclical manner, and each time said scanned bar code symbol is successfully read during said bar code symbol reading cycle, a new bar code symbol character string is produced; and

5 (d) within said bar code symbol reading cycle, manually actuating said manually-activatable data transmission switch, causing said data transmission control activation signal to be produced, and thereby enabling a currently or subsequently produced symbol character data string to be automatically selected and transmitted to said host system for storage and/or processing.

10 37. The method of claim 36, wherein said hand-supportable housing has an indicator light, and wherein step (c) further comprises

actively driving said indicator light each time said new bar code symbol character string is produced.

15 38. An automatically-activated bar code symbol reading system comprising:

(1) a hand-supportable housing supportable in or on the hand of a user, and having a light transmission aperture through which visible light can exit and enter said hand-supportable housing;

20 (2) automatic scan data producing means in said hand-supportable housing for producing scan data from a bar code symbol on an object located within at least a portion of a laser scanning field definable relative to said hand-supportable housing, said scan data producing mechanism including

(i) a laser beam producing means disposed in said hand-supportable housing for producing and projecting a laser beam through said light transmission aperture,

(ii) a scanning mechanism for repeatedly scanning said laser beam across said laser scanning field and across said bar code symbol on said object, and

(iii) laser light detector for detecting the intensity of laser light reflected off said bar code symbol and passed through said light transmission aperture and for automatically producing scan data indicative of said detected light intensity;

(3) a bar code symbol detector in said hand-supportable housing for processing produced scan data so as to detect the presence of said bar code symbol on said object and to automatically generate a first control activation signal in response to the detection of said bar code symbol in said laser scanning field;

(4) a decode processor in said hand-supportable housing for processing produced scan data so as to decode said bar code symbol on said object and for automatically producing symbol character data representative of said decoded bar code symbol, and automatically generating a second control activation signal indicative of the production of said symbol character data;

(5) manually-actuable data transmission switch integrated with said hand-supportable housing, for producing a third control activation signal in response to the manual-actuation of said manually-actuable data transmission switch;

(6) a data transmitter in said hand-supportable housing, for transmitting said symbol character data to a host device operably connected to said automatic bar code symbol reading system only in response to the occurrence of at least said second and third control activation signals; and

(7) a system controller for automatically controlling the operation of said automatic bar code symbol reading system in response to the generation of said first, second and third control activation signals.

39. The automatically-activated bar code symbol reading system of claim 38, which further comprises:

a hand-held mode of automatic operation and a countertop-supported mode of automatic operation; and

a mode selector integrated with said hand-supportable housing, for generating said third control activation signal in response to said hand-supportable housing being placed in a scanner stand or on a countertop surface.

40. The automatically-activated bar code symbol reading system of claim 38, wherein said bar code symbol has first and second envelope borders, and said bar code symbol detector detects said bar code symbol by detecting said first and second envelope borders.

41. The automatically-activated bar code symbol reading system of claim 38, wherein said scan data producing mechanism is activatable, and said hand-supportable bar code symbol reading device further comprises

5           an object detector in said hand-supportable housing, for detecting said object in at least a portion of an object detection field defined relative to said housing and automatically generating a fourth activation control signal indicative of the detection of said object in at least a portion of said object detection field; and

10           wherein said system controller automatically controls the operation of said automatic bar code symbol reading system in response to the generation of said first, second, third and fourth control activation signals.

42. The automatically-activated bar code symbol reading system of claim 41, wherein said object detector comprises

15           a signal transmitter for transmitting a signal towards said object in said object detection field, and

            a signal receiver for receiving said transmitted signal reflected off said object in at least a portion of said object detection field, and automatically generating said activation signal indicative of the detection of said object in at least a portion of said scan field.

20           43. The automatically-activated bar code symbol reading system of claim 42, wherein said signal transmitter comprises an infra-red light source for transmitting a pulsed infra-red light signal, and wherein said signal receiver comprises an infra-red light detector disposed in said hand-supportable housing.

25           44. The automatically-activated bar code symbol reading system of claim 42, wherein said signal transmitter comprises a laser diode for transmitting a pulsed laser signal, and wherein said signal receiver comprises a photodetector disposed in said hand-supportable housing.

30           45. The automatically-activated bar code symbol reading system of claim 38, wherein said laser beam producing mechanism comprises a laser diode for producing a visible laser beam.

46. The automatically-activated bar code symbol reading system of claim 38, wherein said hand-supportable housing comprises a head portion and handle portion.

5 47. The automatically-activated bar code symbol reading system of claim 46, wherein said bar code symbol detector and said scan data producing mechanism are disposed in said head portion.

48. An automatically-activated laser scanning bar code symbol reading system, comprising:

10 a hand-supportable housing;

a laser-scanning bar code symbol reading mechanism, disposed in said hand-supportable housing, for repeatedly reading one or more bar code symbols on an object within a predetermined time period, and in response to each new successful reading of one of said bar code symbols within said predetermined time period, producing a new symbol character data string representative of said read bar code symbol;

15 a data transmission circuit, disposed in said hand-supportable housing, for transmitting, when activated, a selected one of said produced symbol character data strings to a host system operably connected to said automatically-activated laser scanning bar code symbol reading system;

20 a manually-activatable data transmission switch, integrated with said hand-supportable housing, for generating a data transmission control activation signal in response to the actuation of said manually-activatable data transmission switch within said predetermined time period; and

25 a system controller for activating said data transmission circuit in response to the generation of said data transmission control activation signal so that a symbol character data string, produced current with or immediately subsequent to the activation of said manually-activatable data transmission switch, is transmitted to said host system.

30 49. The automatically-activated laser scanning bar code symbol reading system of claim 11, which further comprises an indicator, integrated with said hand-supportable housing, for indicating each instance of when a bar code symbol is read by said laser-scanning bar code

symbol reading mechanism and a symbol character data string representative thereof is produced thereby.

50. The automatically-activated laser scanning bar code symbol reading system of claim 48, which further comprises

a hand-held mode of automatic operation and a countertop-supported mode of automatic operation; and

mode selection means integrated with said hand-supportable housing, for generating said data transmission control activation signal in response to said hand-supportable housing being placed in a scanner stand or on countertop surface.

51. An automatically-activated bar code symbol reading system for carrying out bar code symbol reading operations, comprising:

a hand-supportable housing;

a manually-activatable data transmission activation switch integrated with said hand-supportable housing; and

an automatically-activated laser scanning bar code symbol reading engine, disposed within said hand-supportable housing, and having

(i) a preprogrammed set of operational states wherethrough the system automatically passes during each bar code symbol reading operation, and

(ii) a preprogrammed symbol character data transmission state of operation into which said system is automatically induced in response to the manually-actuation of said symbol character data transmission activation switch.

52. The automatically-activated bar code symbol reading system of claim 51, wherein the preprogrammed set of operational states include a bar code presence detection state of operation and a bar code symbol reading state of operation.

53. The automatically-activated bar code symbol reading system of claim 52, wherein the preprogrammed set of operational states further include an object detection state of operation.

54. The automatically-activated bar code symbol reading system of Claim 51, which further comprises an objection detection subsystem realized using either infrared (IR) signal transmission/receiving technology, or low-power non-visible laser beam signaling technology, for automatically detecting an object within an object detection field defined relative to said hand-supportable housing.

55. The automatically-activated bar code symbol reading system of claim 51, which further comprises a set of color-encoded light sources provided on the exterior of said hand-supportable housing for sequentially generating a set of visually-perceptible state indication signals that visually indicate to the user the various states of operation, wherethrough said system automatically passes during each instance of automatic bar code symbol reading in accordance with the present invention.

56. An automatically-activated bar code symbol reading system of claim 55, wherein the set of color-encoded state indicating light sources on the exterior of said hand-supportable housing sequentially generate a visually-perceptible object detection indication signal when the system is automatically induced into its the object detection state of operation, a visually-perceptible bar code symbol presence detection indication signal when the system is automatically induced into its bar code symbol presence detection state of operation, and a visually-perceptible bar code symbol reading indication signal when the system is automatically induced into its bar code symbol reading state of operation, during each automatic bar code symbol reading cycle carried out by said system.

57. An automatically-activated bar code symbol reading system comprising:

a hand-supportable housing;

a bar code symbol reader, disposed in said hand-supportable housing, for automatically reading one or more bar code symbols on an object and automatically generating a symbol character data string in response to each bar code symbol read thereby;

a manually-activatable data transmission switch integrated with said hand-supportable housing, for producing a data transmission activation signal; and



a data transmission device for transmitting to a host system, a selected one of said symbol character data strings, in response to the generation of said data transmission activation signal.

58. The automatically-activated bar code symbol reading system of claim 57 which further comprises

a display panel integrated with said hand-supportable housing for displaying data, and  
a manual data entry device integrated with said hand-supportable housing for entering data into said system.

59. The automatically-activated bar code symbol reading system of claim 57, wherein said data transmission device further comprises an RF transmitter for transmitting said selected one of symbol character data strings to a remote base station by way of wireless electromagnetic transmission.

60. The automatically-activated bar code symbol reading system of claim 58, wherein said data transmission device further comprises an RF transmitter for transmitting said selected one of symbol character data strings to a remote base station by way of wireless electromagnetic transmission.

61. An automatically-activated bar code symbol reading system having a bar code symbol reading state of operation and a data transmission state of operation, said system automatically-activated bar code symbol reading comprising:

a hand-supportable housing:

a laser scanning bar code symbol reading device, disposed in said hand-supportable housing, for automatically reading one or more bar code symbols on an object, and producing a symbol character data element each instance one said bar code symbol is read from said object during said bar code symbol reading state of operation;

a data transmission circuit, disposed within said hand-supportable housing, for selectively transmitting a produced symbol character data string to a host system during said data transmission state of operation;

a manually-actuable data transmission switch, integrated with said hand-supportable housing, for activating said data transmission state so as to enable the transmission of a selected one of said produced symbol character data strings to said host system.

5 62. The automatically-activated bar code symbol reading system of claim 61 which further comprises

a display panel integrated with said hand-supportable housing for displaying data, and  
a manual data entry device integrated with said hand-supportable housing for entering data into said system.

10 63. The automatically-activated bar code symbol reading system of claim 61, which further comprises an RF transmitter for transmitting the selected one of said symbol character data strings to a remote base station by way of wireless electromagnetic transmission.

15 64. A portable data terminal comprising:

a hand-supportable housing;  
an automatic laser scanning bar code reading mechanism disposed within said hand-supportable housing, for automatically generating symbol character data strings representative of a bar code symbol being repeatedly read thereby; and

20 a manually-activatable data transmission switch integrated with said hand-supportable housing, to enable transmission of a selected one of said symbol character data strings, to a host system operably connected to said portable data terminal.

25 65. The automatically-activated bar code symbol reading system comprising:

a hand-supportable bar code reading device for repeatedly reading one or more bar code symbols on an object and automatically generating symbol character data strings representative of each bar code symbol being repeatedly read thereby; and

30 a manually-activatable data transmission switch, integrated with said hand-supportable bar code reading device, for enabling transmission of a selected one of said symbol character data strings, to a host system operably connected to said hand-supportable bar code reading device.

66. A method of reading bar code symbols on an object using a hand-supportable device, comprising the steps of:

(a) repeatedly reading one or more bar code symbols on an object within a predetermined time period, and in response to each new successful reading of one of said bar code symbols within said predetermined time period, producing a new symbol character data string representative of said read bar code symbol; and

(b) a manually-actuating a data transmission switch integrated with said hand-supportable device, for generating a data transmission activation control signal within said predetermined time period;

(c) in response to said data transmission activation signal, selecting and transmitting one of said produced symbol character data strings to a host system operably connected to said hand-supportable device.

67. The method of claim 66, which further comprises producing a visual indication upon each new successful reading of one of said bar code symbols.

68. The method of claim 66, which further comprises the steps:

generating said data transmission control activation signal in response to said hand-supportable device being placed in a scanner stand or on countertop surface.

69. The method of claim 66, wherein step (c) comprises further comprises transmitting, by way of wireless electromagnetic transmission, the selected one of said symbol character data strings to a remote bases station operably connected to said host system.

70. The method of claim 69, which further comprises:

displaying data on a display panel integrated with said hand-supportable device, and manually entering data into said hand-supportable device using data entry device integrated with said hand-supportable device.

63. The automatically-activated bar code symbol reading system of claim 61, which further comprises an RF transmitter for

5 71. An automatically-activated code symbol reading system for repeatedly generating symbol character data strings, representative of a repetitively read code symbol, and transmitting a selected of said symbol character data strings to a host system operably connected to said automatically-activated code symbol reading system, said automatically-activated code symbol reading system comprising:

a hand-supportable housing:

10 a code symbol reading mechanism, disposed within said hand-supportable housing, for automatically generating a visible laser scanning pattern for repeatedly reading one or more code symbols on an object during a code symbol reading cycle, and automatically generating a new symbol character data string in response to each code symbol read thereby;

15 a manually-activatable data transmission switch, integrated with said hand-supportable housing, for producing a data transmission control activation signal within said hand-supportable housing;

wherein during system operation,

20 (i) the user visually aligns the visible laser scanning pattern with a particular code symbol on an object so that at least one said code symbol is scanned, detected and decoded in a cyclical manner, and each time the scanned code symbol is successfully read during said code symbol reading cycle, a new bar code symbol character string is produced, and

25 (ii) the user actuates said data transmission switch during said code symbol reading cycle, causing data transmission control activation signal to be produced, and thereby enabling a subsequently produced symbol character data string to be automatically selected and transmitted to said host system.

30 72. The automatically-activated code symbol reading system of claim 71, which further comprises an indicator light on the hand-supportable housing, and wherein each time said new bar code symbol character string is produced, said indicator light on the hand-supportable housing is actively driven.

73. A method for repeatedly generating symbol character data strings, representative of a repetitively read code symbol on an object, and transmitting a selected symbol character data string to a host system for storage and/or processing, said method comprising the steps of:

5 (a) supporting a hand-supportable code symbol reading device adjacent an object bearing one or more code symbols to be read, said hand-supportable code symbol reading device having a manually-activatable data transmission switch for producing a data transmission control activation signal within said hand-supportable code symbol reading device;

10 (b) automatically generating a visible laser scanning pattern from said hand-supportable code symbol reading device, for repeatedly reading said one or more bar code symbols on said object during a code symbol reading cycle, and automatically generating a new symbol character data string in response to each code symbol read thereby;

15 (c) visually aligning said visible laser scanning pattern with one said bar code symbol on said object so that one said code symbol is scanned, detected and decoded in a cyclical manner, and each time said scanned bar code symbol is successfully read during said code symbol reading cycle, a new bar code symbol character string is produced; and

20 (d) within said bar code symbol reading cycle, manually actuating said manually-activatable data transmission switch, causing said data transmission control activation signal to be produced, and thereby enabling a currently or subsequently produced symbol character data string to be automatically selected and transmitted to said host system for storage and/or processing.

74. The method of claim 73, wherein said hand-supportable housing has an indicator light, and wherein step (c) further comprises

25 actively driving said indicator light each time said new bar code symbol character string is produced.

75. A wireless automatic hand-supportable bar code symbol reading system with automatic range-dependent data transmission control.

30 76. A wireless laser scanning bar code symbol reading system employing a 2-way RF-based data communication link between its cradle-providing base station and its wireless hand-

supportable code symbol reading device employing a manually-operated data transmission activation switch that is controlled by automatically detecting whether or not the hand-supportable wireless device is located within the RF communication range of the RF-based data communication link.

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77. A wireless laser scanning bar code symbol reading system system, wherein the range-dependent condition is detected by detecting the strength of "heartbeat" signals automatically transmitted from the base station to the wireless hand-supportable device.

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78. A wireless laser scanning bar code symbol reading system, wherein if the hand-supportable scanning device is located out-side of the predetermined 2-way RF communication range, then an audible and/or visual indicator is generated and packaged symbol character data is automatically buffered within the memory storage of device until the device moves into its communication range at a later time, during the next requested data transmission to the host computer system.

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79. A wireless laser scanning bar code symbol reading system designed for use in point-of-sale environments or light warehousing applications.

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80. A wireless laser scanning bar code symbol reading system, wherein wireless reader is programmed to require the user to press the data transmission activation button another time to transmit the barcode after it has just established a new communication link with its base station.

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81. A wireless laser scanning bar code symbol reading system, wherein its system control process is programmed to enables multiple reads to be stored before data transmission is to occur to the base station after depressing the data transmission activation switch.

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82. A wireless laser scanning bar code symbol reading system, wherein its control system is programmed so that all three LEDs illuminate to indicate that wireless reader is out of range, as

well as so that all three LEDs illuminate to indicate that there is stored data in a Data Packet Group Buffer waiting to be transmitted to the base station.

5 83. A wireless laser scanning bar code symbol reading system, wherein its control system is programmed so that stored data can be cleared by holding down the data transmission activation switch for programmed duration (i.e. 3 sec.).

10 84. A wireless laser scanning bar code symbol reading system, wherein its control system can be programmed so that it tests its data communication link before transmission of data packets buffered in memory.

15 85. A wireless laser scanning bar code symbol reading system, wherein a mechanical vibrator is provided within the hand-supportable housing of the wireless device so that when scan data transmission from the reader to the base station is successful, then the reader automatically vibrates.

20 86. A wireless laser scanning bar code symbol reading system, wherein a low battery protection circuit is provided within the wireless hand-supportable reader for (i) automatically monitoring battery voltage; (ii) razzing/vibrating the reader if the battery voltage is low, and turning off laser diode within the device, and causing the system to enter its sleep mode.

25 87. A wireless laser scanning bar code symbol reading system, wherein the RF transceiver chip set and associated microcontrollers aboard the wireless reader and base station are automatically driven into a low power mode when the data communication link between the wireless reader and its base station is disconnected or terminated.

30 88. The wireless laser scanning bar code symbol reading system of claim 87. wherein when the wireless reader is waked up, said microcontrollers are also woken up at the same time, and the RF transceivers automatically activated and the communication link reestablished.

89. A wireless laser scanning bar code symbol reading system wireless laser scanning bar code symbol reading system, wherein a system power switch is located at the rear end of reader's housing, and accessible by way of a small pin hole.

5 90. A wireless laser scanning bar code symbol reading system, wherein the cradle portion of the base station is provided with protractable/retractable support hooks for supporting the hand-held reader in both vertical and horizontal orientations.

10 91. A wireless laser scanning bar code symbol reading system, wherein the firmware of wireless bar code reader's firmware is updated by a host computer.

92. A wireless laser scanning bar code symbol reading system, capable of reading 2-D bar code symbologies, and having means for providing automatic range-dependent data transmission control.